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INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY
(Chapter II of the Patent Cooperation Treaty)
(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 5261-105WO//P28,363-	FOR FURTHER ACTION	See Form PCT/IPEA/416																								
International application No. PCT/US04/35383	International filing date (<i>day/month/year</i>) 22 October 2004 (22.10.2004)	Priority date (<i>day/month/year</i>) 22 October 2003 (22.10.2003)																								
International Patent Classification (IPC) or national classification and IPC IPC(7): H04B 17/00 and US Cl.: 370/203-206, 210, 334, 352-356, 395.1, 401, 465; 375/267, 347; 455/25, 101																										
Applicant SPEEDUS CORP.																										
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of <u>5</u> sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p style="margin-left: 20px;">a. <input checked="" type="checkbox"/> (<i>sent to the applicant and to the International Bureau</i>) a total of <u>4</u> sheets, as follows:</p> <p style="margin-left: 40px;"><input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p style="margin-left: 40px;"><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p style="margin-left: 20px;">b. <input type="checkbox"/> (<i>sent to the International Bureau only</i>) a total of (indicate type and number of electronic carrier(s)) _____, containing a sequence listing and/or tables related thereto, in electronic form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>																										
<p>4. This report contains indications relating to the following items:</p> <table style="width: 100%; border: none;"><tr><td style="width: 10%;"><input checked="" type="checkbox"/></td><td style="width: 20%;">Box No. I</td><td>Basis of the report</td></tr><tr><td><input type="checkbox"/></td><td>Box No. II</td><td>Priority</td></tr><tr><td><input type="checkbox"/></td><td>Box No. III</td><td>Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</td></tr><tr><td><input type="checkbox"/></td><td>Box No. IV</td><td>Lack of unity of invention</td></tr><tr><td><input checked="" type="checkbox"/></td><td>Box No. V</td><td>Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</td></tr><tr><td><input type="checkbox"/></td><td>Box No. VI</td><td>Certain documents cited</td></tr><tr><td><input type="checkbox"/></td><td>Box No. VII</td><td>Certain defects in the international application</td></tr><tr><td><input type="checkbox"/></td><td>Box No. VIII</td><td>Certain observations on the international application</td></tr></table>			<input checked="" type="checkbox"/>	Box No. I	Basis of the report	<input type="checkbox"/>	Box No. II	Priority	<input type="checkbox"/>	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability	<input type="checkbox"/>	Box No. IV	Lack of unity of invention	<input checked="" type="checkbox"/>	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement	<input type="checkbox"/>	Box No. VI	Certain documents cited	<input type="checkbox"/>	Box No. VII	Certain defects in the international application	<input type="checkbox"/>	Box No. VIII	Certain observations on the international application
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Date of submission of the demand 05 July 2005 (05.07.2005)	Date of completion of this report 21 October 2005 (21.10.2005)																									
Name and mailing address of the IPEA/ US Mail Stop PCT, Attn: IPEA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (703) 305-3230	Authorized officer: Frank Duong Telephone No. 571-272-3164																									

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/US04/35383

Box No. I Basis of the report

1. With regard to the language, this report is based on:

- ☒ the international application in the language in which it was filed.
- ☐ a translation of the international application into English, which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
- ☐ publication of the international application (under Rule 12.4(a))
- ☐ international preliminary examination (under Rules 55.2(a) and/or 55.3(a))

2. With regard to the elements of the international application, this report is based on (*replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report*):

- ☐ the international application as originally filed/furnished
- ☒ the description:
pages 1-15 as originally filed/furnished
pages* NONE received by this Authority on _____
pages* NONE received by this Authority on _____
- ☒ the claims:
pages NONE as originally filed/furnished
pages* 16-19 as amended (together with any statement) under Article 19
pages* 16-19 received by this Authority on 05 July 2005 (05.07.2005)
pages* NONE received by this Authority on _____
- ☒ the drawings:
pages 1-10 as originally filed/furnished
pages* NONE received by this Authority on _____
pages* NONE received by this Authority on _____
- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing.

3. ☒ The amendments have resulted in the cancellation of:

- ☒ the description, pages NONE
- ☒ the claims, Nos. NONE
- ☒ the drawings, sheets/figs NONE
- ☒ the sequence listing (*specify*): NONE
- ☒ any table(s) related to the sequence listing (*specify*): NONE

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing (*specify*): _____
- ☐ any table(s) related to the sequence listing (*specify*): _____

* If item 4 applies, some or all of those sheets may be marked "superseded."

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/US04/35383

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims <u>NONE</u>	YES
	Claims <u>1-24</u>	NO
Inventive Step (IS)	Claims <u>NONE</u>	YES
	Claims <u>1-24</u>	NO
Industrial Applicability (IA)	Claims <u>1-24</u>	YES
	Claims <u>NONE</u>	NO

2. Citations and Explanations (Rule 70.7)
Please See Continuation Sheet

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of:

V. 2. Citations and Explanations:

Claims 1-24 lack novelty under PCT Article 33(2) as being anticipated by Raleigh et al (USP 6,463,096) (hereinafter "Raleigh").

Regarding claim 1, in accordance with Raleigh reference entirety, Raleigh shows a multi-function microwave radio system (Fig. 1) comprising:

one or more grid elements (CPEs 104), each data grid element (104) comprising:

one or more smart edge wireless hubs (Fig. 3) comprising: hub-radio means (Fig. 3; element 314) for transmission and reception of radio signals (col. 6, lines 3-9); and a hub-micro-controller means (Fig. 3; element 320) for selecting transmission and reception parameters of said hub-radio means (col. 6, lines 18-21); and

a central processing unit (Fig. 1; element 102 and details shows in Fig. 2) comprising: a core-radio means (Fig. 2; element 204) for transmission and reception of microwave signals (col. 5, lines 5-12); an internet packet switching means (Fig. 2; element 212) for dynamically routing one or more information packets to said smart edge wireless hubs (104) (col. 5, lines 53-61); and said core-micro-controller means (Fig. 2; elements 210 and 208) for selecting transmission and reception parameters (frequency, rate and frames) of said core-radio of said hub-radio (col. 5, lines 28-52).

Regarding claim 2, in addition to features recited in base claim 1 (see rationales discussed above), Raleigh further shows wherein said transmission and reception parameters include one or more of a radio modulation type, a transmission frequency, an antenna, a polarization orientation and a polarization selection (col. 5, lines 35-42).

Regarding claim 3, in addition to features recited in base claim 1 (see rationales discussed above), Raleigh further shows wherein said type of modulation is selected from the group consisting of Quadrature Amplitude Modulation (QAM), Quadrature Phase Shift Keying (QPSK) and Orthogonal Frequency Division Multiple Access (OFDM) (col. 4, lines 60-61 and thereafter).

Regarding claim 4, in addition to features recited in base claim 2 (see rationales discussed above), Raleigh further shows wherein said antenna type is selected from the group consisting of an omni antenna and a multiple sector antenna (col. 4, lines 47-48).

Regarding claim 5, in addition to features recited in base claim 2 (see rationales discussed above), Raleigh further shows wherein said transmission frequency is selected by reference to a centralized or distributed registrar of all frequencies available to all said smart edge hubs (col. 5, lines 28-30).

Regarding claim 6, in addition to features recited in base claim 5 (see rationales discussed above), Raleigh further shows wherein said core-micro-controller means further includes a packet measurement means (Fig. 2; element 210) for obtaining a quality-of-service measure related to said transmission and reception of said radio signals; and wherein said selecting of said transmission and reception parameters is responsive to said quality-of-service measure (col. 5, lines 28-43).

Regarding claim 7, in addition to features recited in base claim 2 (see rationales discussed above), Raleigh further shows wherein

Supplemental Box

said core-micro-controller means includes means for adjusting a transmission power and/or a bandwidth of said core-radio means responsive to said quality of service measure (col. 5, lines 28-43).

Regarding claims 8-10, in addition to features recited in base claim 1 (see rationales discussed above), Raleigh further discloses (col. 5, lines 53-60) a transmit priority processor 216 for queues up IP packets to be transmitted and forwards them base on priority. The functionalities of transmit priority processor 216 is equated to correspond to "means for establishing a primary and a secondary transmission channel over diverse paths" and "traffic rerouting means" due to the IP packets are transmitted or switched (forwarded) based on priority.

Regarding claims 11-12, in addition to features recited in base claim 1 (see rationales discussed above), Raleigh further discloses wherein said information packets comprise secured, sealed electronic packets (col. 5, line 53; IP packets).

Claims 13-24 are method claims mirrored system claims 1-12. Thus, they are anticipated by the same rationales discussed above.

Claims 1-24 meet the criteria set out in PCT Article 33(4), and thus have industrial applicability because the subject matter claimed can be made or used in industry.

----- NEW CITATIONS -----

1.09/13

CLAIMS

What is claimed is:

1. A multi-function microwave radio system comprising:

one or more data grid elements, each data grid element comprising:

one or more smart edge wireless hubs comprising: hub-radio means for transmission and reception of radio signals; and a hub-micro-controller means for selecting transmission and reception parameters of said hub-radio means ; and

a central processing unit comprising: a core-radio means for transmission and reception of microwave signals; an internet packet switching means for dynamically routing one or more information packets to said smart edge wireless hubs; and core-micro-controller means for selecting transmission and reception parameters of said core-radio and of said hub-radio, said core-micro-controller means including a transmission type selection means for automatically selecting to switch said hub-radio means and said core-radio means from transmitting and receiving using a first radio modulation type to transmitting and receiving using a second, different, radio modulation type.

2. The system of claim 1, wherein said core-micro-controller means further includes a packet measurement means for obtaining a quality-of-service measure related to said transmission and reception of said radio signals.

3. The system of claim 1 wherein said first and second radio modulation types are dynamically selected from the group consisting of Quadrature Amplitude Modulation (QAM), Quadrature Phase Shift Keying (QPSK) and Orthogonal Frequency Division Multiplexing (OFDM), responsive to said quality-of-service measure.

4. The system of claim 2, wherein said core-micro-controller means further includes an antenna type selection means for automatically selecting to switch said hub-radio means and said core-radio means from transmitting and receiving using a first antenna type to transmitting and receiving using a second, different, antenna type and wherein said first and second antenna types are selected from the group consisting of an omni antenna and a multiple sector antenna.

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5. The system of claim 2, wherein said core-micro-controller means further includes a transmission frequency selection means for selecting a transmission frequency by reference to a centralized or distributed registrar of all frequencies available to all said smart edge hubs.
6. The system of claim 5 wherein said transmission frequency selection means is responsive to said quality of service measurement.
7. The system of claim 2 wherein said core-micro-controller means further includes means for adjusting a transmission power and/or a bandwidth of said core-radio means responsive to said quality-of-service measure.
8. The system of claim 1, wherein said central processing unit further includes means for establishing a primary and a secondary transmission channel over diverse paths.
9. The system of claim 8, wherein said central processing unit further includes means for traffic rerouting responsive to a failure to transmit said information packet.
10. The system of claim 8, wherein said central processing unit further includes means for traffic rerouting responsive a traffic load imbalance.
11. The system of claim 1, wherein said information packets comprise secured, sealed electronic packets.
12. The system of claim 11, wherein said secured, sealed electronic packets comprise header means responsive to packet tampering.

13. A multi-function microwave radio transmission method, comprising the steps of:
- providing a central processing unit comprising a core-radio, a core-micro-controller and an internet packet switch ;
 - providing one or more smart edge wireless hubs comprising a hub-radio and a hub-micro-controller;
 - automatically selecting to switch said core-radio and said hub-radio from transmitting and receiving using a first radio modulation type to transmitting and receiving using a second radio type; and
 - dynamically routing one or more information packets to said smart edge wireless hubs using said internet packet switch and one or more radio signals transmitted from said core-radio.
14. The method of claim 13, further comprising the step of obtaining a quality-of-service measure related to said transmission and reception of said radio signals using a packet measurement system.
15. The method of claim 14, wherein said first and second radio modulation types are selected from the group consisting of Quadrature Amplitude Modulation (QAM), Quadrature Phase Shift Keying (QPSK) and Orthogonal Frequency Division Multiplexing (OFDM), and wherein said selection is responsive to said quality of service measure.
16. The method of claim 14, further comprising the step of automatically selecting to switch said core-radio and said hub-radio from transmitting and receiving using a first antenna type to transmitting and receiving using a second antenna type and wherein said first and second antenna types are selected from the group consisting of an omni antenna and a multiple sector antenna.
17. The method of claim 14, further comprising selecting a transmission frequency by reference to a centralized or distributed registrar of all frequencies available to all said smart edge hubs.
18. The method of claim 17 wherein said transmission frequency selection is responsive to said quality of service measurement.

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19. The method of claim ~~18~~, 14 further comprising the step of adjusting a transmission power and/or a bandwidth of said core-radio responsive to said quality-of-service measure.
20. The method of claim 13, further comprising the step of establishing a primary and a secondary transmission channel over diverse paths using said central processing unit.
21. The method of claim 20, further comprising the step of rerouting traffic responsive to a failure to transmit said information packet.
22. The method of claim 20, further comprising the step of rerouting traffic responsive to a traffic load imbalance using said central processing unit.
23. The method of claim 20, wherein said information packets comprise secured, sealed electronic packets.
24. The system of claim 23, wherein said secured, sealed electronic packets comprise headers capable of detecting packet tampering.